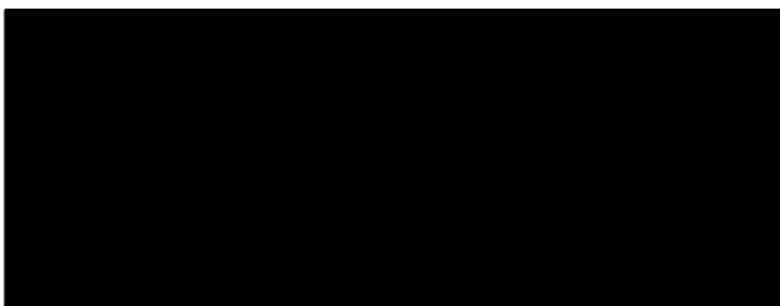


EXHIBIT Q - REDACTED



Context

We were introduced to Telegram via [REDACTED], and [REDACTED] a subset [REDACTED] met with Telegram founder/CEO Pavel Durov via Zoom to discuss the company's new Ethereum competitor ("Telegram Open Network/TON") and corresponding cryptocurrency ("Grams/GRM").

Telegram now has 180M MAU (up from 100M last year) and plans to leverage its large user base to launch a cryptocurrency that is more scalable and accessible to mass market users.

The private pre-sale will raise \$600M, and is currently 3x oversubscribed with minimum check size \$20M. The deadline to indicate [REDACTED] interest [REDACTED]

While we are leaning in, several references on the technology and opportunity are still in flight, so we are not yet ready to make a recommendation. Given a short fuse, we are distributing this memo which frames the investment opportunity absent these references.

Smart Contract Blockchains

Unlike the Bitcoin blockchain which is optimized toward a store of value use-case, smart contract blockchains such as Ethereum support arbitrary computation and thus enable a broader range of decentralized applications (so called "dApps") such as crowdfunding (e.g. ICOs), digital asset registries (e.g. Cryptokitties), and sharing economies for computational resources [REDACTED], with many other promising applications likely to reveal themselves over time.

Although smart contract blockchains hold promise, today they are frustratingly unscalable proof-of-concepts. This lack of scalability is in part by design: whereas a conventional distributed system might execute disparate small computations across 1000 nodes to accomplish a larger computation, a blockchain system would repeat *the same* small computation on 1000 nodes to gain consensus about that small computation - a 1,000,000-fold less efficient use of compute. As this example illustrates, blockchains trade computational scalability for secure + decentralized consensus.

Academic and industry research is underway to improve scalability while minimizing the impact on decentralization/security. [REDACTED]
[REDACTED]

Telegram Open Network (TON)

Telegram CTO Nikolai Durov and team were originally planning to integrate Ethereum into the Telegram app, but having run into scalability challenges they instead devised a new smart contract blockchain that leverages leading research in blockchain sharding, cross-shard communication, and other areas to deliver a more scalable alternative to Ethereum. Telegram also plans to build related services such as decentralized storage, VPN, DNS, etc. The TON blockchain will have a native cryptocurrency token - the Gram (GRM).

[REDACTED] have digested the whitepaper and are enthusiastic about the TON approach. [REDACTED]
[REDACTED] is cautiously optimistic, which we interpret positively given [REDACTED]
[REDACTED] (see Appendix A). We are also running down additional expert references.

Investment Thesis

An investment in the GRM currency rests on:

- 1) [REDACTED]
- 2) [REDACTED]
- 3) [REDACTED]
- 4) [REDACTED]
[REDACTED]

Team

Telegram was founded by brothers Pavel Durov (CEO) and Nikolai Durov (CTO). The brothers previously co-founded VK, the Facebook of Russia.

Pavel is a self-professed libertarian and has strong belief in privacy and individual sovereignty. After refusing to cooperate with Russian government data requests, he was ousted from VK and effectively forced to leave the country. He and Nikolai then founded Telegram, which they fully own and have funded with ~\$200M of personal capital.

Nikolai is a mathematician and world-class programmer. In addition to being CTO and lead engineer of Telegram and VK, Nikolai was a two-time ACM world programming champion ('00-'01), three-time international math olympiad gold medalist ('96-'98), four-time international informatics olympiad gold/silver medalist ('95-'98).

In addition, Telegram has a 15-person engineering team which includes many other world class engineers and ACM/IMO/IIO medalists.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Telegram

The Telegram app has 180M MAU (up from 100M MAU last year), adding 500K users per day. The app is highly penetrated in many Middle Eastern, Eastern European, and Central Asian countries, but weaker in

Whatsapp strong countries and the US/UK. High penetration is correlated with higher engagement - higher time spent, higher number of sessions, higher stickiness, higher open rates. They are starting to grow in Brazil and India. As they tip in more countries their engagement will likely only grow. (See Appendix B for more detailed analysis from [REDACTED])

Importantly, Telegram is increasingly used as the mobile messaging and social platform for large communities, particularly in the cryptocurrency niche. For example, 84% of blockchain projects have an active Telegram community. Forbes and other media outlets have called Telegram the “cryptocurrency world’s preferred messaging app” and “as ubiquitous to the cryptocurrency world as Snapchat is to a teenager”. (See Appendix C for example communities).

[REDACTED]

[REDACTED]

Grams (GRM)

The Grams currency will be used both as a general purpose currency (to buy and sell products and services) and as a blockchain-specific currency (to purchase compute on the TON blockchain and access its decentralized app ecosystem).

A GRM wallet will be incorporated into the Telegram app, which will enable 180M and growing MAU to easily access and use GRM currency. Telegram will also act like a “browser” for dApps (such as Cryptokitties).

Token Sale

5B Gram tokens will be minted in the genesis block, of which 2.2B are being sold to investors. Gram tokens follow an exponentially increasing price beginning at \$0.10 per token and scaling to \$0.90 per token. If the full \$600M block is purchased in the pre-sale then 1.95B tokens will be sold at an average price of \$0.31 per token implying a network value of \$1.54B.

Value of a Smart Contract Currency

In the short term, smart contract currencies like Telegram/GRM will be priced on a speculative basis, largely relative to BTC (\$258B) and ETH (\$121B). Long term, there are three credible points of view on the value of smart contract currencies:

1. Smart contract currencies will have low value [REDACTED]
[REDACTED]
[REDACTED].
2. Smart contract currencies will have medium value [REDACTED]
[REDACTED]
[REDACTED].
3. A smart contract currency has massive value [REDACTED]
[REDACTED].

In our view, scenario [REDACTED] is the most plausible: [REDACTED]
[REDACTED].

[REDACTED]

Today, there are many smart contract platforms, most of which are not seeing usage beyond speculation: Ethereum (\$121B), Cardano (\$23B), NEO (\$7B), EOS (\$5B), QTUM (\$4B), etc.

In this (admittedly speculative) environment and at \$1.54B entry price, there is a plausible [REDACTED] return possible for [REDACTED].

Recommendation

We are not yet ready to make a recommendation. Several references on the technology and opportunity are still in flight, but given a short fuse we wanted to distribute this memo to frame the investment opportunity absent complete references.

We will follow-up tomorrow with additional references and a specific recommendation. We welcome any feedback and questions in the meantime.

Appendix A. Technical References

[REDACTED]
I just read through the Overview & Whitepaper. [REDACTED].

Huge caveat: *I am not deep in this space and have not read other white papers.*

Impressions:

1/ Impressive. The breadth + depth of the technical work here was impressive. There's a lot of stuff here and superficially, [REDACTED]. My impression is that a very smart, sane person surveyed the landscape, put it all together into a single system that makes sense and is run by a sane BDFL, and said "here it is."

2/ Lot of stuff to build. There's a lot of code to write here. They claim to have 15 amazing engineers for Telegram + this. [REDACTED]
[REDACTED]

3/ Turtles all the way down. [REDACTED] it's literally block chains all the way down: Masterchain -> Workchains -> Shardchains -> Each block is a chain. [REDACTED]
[REDACTED]

4/ Years to know if it actually works. The value of these systems rely on [REDACTED]. There's so much code to write + verify here that [REDACTED]. I felt like I was reading the manual/white paper for BSD Unix or something similar. You can conceptually wrap your head around the entire system but there's a lot of code to write by a few amazing engineers.

Overall, my net impression was [REDACTED]. This is the first blockchain/crypto manifesto that [REDACTED]. It wasn't obscure currencies all the way down with convoluted interoperating micropayments. It felt like [REDACTED]
[REDACTED]

All that said, it's hard to really absorb 140 pages of technical documentation [REDACTED] and I have no domain expertise.

- [REDACTED]
1. [REDACTED] This feels like most important step.
2. [REDACTED]
3. [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
Had a chance to review it. IMHO [REDACTED]. A lot of the stuff they talk about no one has really gotten to work yet. I also have concerns that [REDACTED] (albeit that's not the end of the world given the use-case).

That said, I have a soft spot for [REDACTED]
[REDACTED]
[REDACTED]

Appendix B. Telegram Analysis via [REDACTED]

(data from [REDACTED] and other publicly available data)

Summary

Telegram is highly penetrated in many Middle Eastern, Eastern Europe and Central Asian countries. High penetration is correlated with higher engagement - higher time spent, higher number of sessions, higher stickiness, higher open rates. They are starting to grow in India and Brazil (low penetrations though). As they begin to tip in more countries their engagement will likely only grow. However, they have not increased their penetration in Whatsapp strong countries.

User Growth

Telegram has about 180 M monthly active users which is growing roughly at 50 % Y/Y. Roughly 500k install the app each day primarily from Eastern Europe, Middle East, Central Asia, India and Brazil. Their penetration in Uzbekistan is about 90 %, Iran at 80%, Iraq, Ukraine, Russia, Saudi Arabia, UAE all around 40% and Singapore, Indonesia around 20%. The weekly and monthly open rates (i.e % of people that open the app if installed) are also highly correlated with penetration - and are very high for high penetration countries > 80%. Their biggest growth is in India and Brazil with the US and UK having some of the lowest penetrations and growth.

Engagement

- Retention - The day 1 and day 30 retention rates are 50% and 26% in the US. This about the same for Whatsapp in the US. It is very likely that the retention rates are much higher in highly penetrated countries such as Uzbekistan and Iran (we don't have data).
- Stickiness- The median number of days that users are active in the last 28 (L28) is 14 globally for Telegram. It is very likely that this number is much higher in highly penetrated countries and is in the same order as Whatsapp below. The DAU/MAU for the app is 50 %. DAU/MAU for Whatsapp is around 80% but was lower at this stage and Facebook in the US at 77 %. DAU/MAU is very likely high in Iran and Uzbekistan.

Name	L28	DAU/MAU
Youtube	14	0.52
Facebook	21	0.66
FB Messenger	16	0.58
Whatsapp	22	0.80
Instagram	15	0.54
google photos	7	0.25
google plus	4	0.13
hangouts	3	0.10
snapchat	16	0.58
twitter	13	0.44
viber	13	0.42
line	17	0.58
imo	11	0.38
pinterest	7	0.27
linkedin	8	0.28

- Time spent - Overall time spent has stayed steady at 22 minutes with highly penetrated countries much higher. Iran users spend 50 minutes/day; Uzbekistan 32 minutes/day which have been growing. The number of sessions overall is 16 /day again skewed higher in highly penetrated countries.

